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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/592.003	06/12/2000	Kevin M. McHugh	EGG-PI-612A1a	3578

7590 05/24/2002  
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EXAMINER

LEYSON, JOSEPH S

ART UNIT	PAPER NUMBER
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1722

DATE MAILED: 05/24/2002

8

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/592,003

Applicant(s)

MCHUGH, KEVIN M.

Examiner

Joseph Leyson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 February 2002.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8, 16-24 and 32-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8, 16-24 and 32-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

1. The status of the parent case 09/023,037 on p. 1 of the specification should be updated (i.e., now abandoned or now U.S. Patent No. #), and it is noted that the statements to related cases on p. 1 of the specification does NOT match the filing receipt (i.e., the priority of parent cases 07/983,459 and 08/320,032 are not on p. 1, and the relationships of the cases relative as to whether each is a continuation or a continuation-in-part are NOT correct. The examiner suggests replacing the paragraph in lines 4-6 on p. 1 of the specification with the following:

-- This is a continuation-in-part of U.S. application No. 09/023,037, filed February 13, 1998, now U.S. Patent No. 6,074,194, which is a continuation of U.S. application No. 08/320,032, filed October 7, 1994, now U.S. Patent No. 5,718,863, which is a continuation-in-part of 07/983,459, filed on November 30, 1992, now abandoned. --

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

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3. Claims 1-8, 16, 17 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bowen et al.(-043) in view of Orme et al.(-360), Alvarez et al.(-853) and Garner et al.(-152).

Bowen et al.(-043) disclose a system for spray forming manufacture of an article including a heated nozzle 14c having a flow channel, the flow channel having an inlet end, an outlet end and a longitudinal axis, a pressurized heated liquid reservoir 14 (gas source S1; col. 3, line 44, to col. 4, line 7) in fluid communication with the nozzle flow channel, the reservoir 11 containing a liquid material capable of forming a mold, the nozzle 14c forming droplets directed to a chamber B containing a quench gas such as argon (col. 8, lines 24-47), the quench gas having a controlled temperature and composition for controlling the in-flight cooling of the droplets (col. 8, lines 24-56; col. 10, lines 17-34), means for directing and depositing the cooled atomized droplets onto a pattern 30 to form the article (col. 4, line 38, to col. 5, line 62), and means for providing relative movement between the nozzle and the pattern (col. 5, line 63, to col. 6, line 25). However, Bowen et al.(-043) does not disclose a nozzle as recited by the instant claims.

Orme et al.(-360) disclose that a deficiency in spraying forming is that the spray is for the most part uncontrolled. The droplets within the spray have a wide distribution of sizes and energies. And thus the smaller droplets may arrive at the surface pre-solidified, and there would be little cohesion between the particles in the deposit.

Alvarez et al.(-853) disclose nozzles 100, 100a having flow channels with linear transverse cross-sectional geometries, the flow channels having inlet ends, outlet ends and longitudinal axes, a liquid material being injected through a conduit 3, 3a ending in the nozzle flow channel between the inlet and outlet ends and proximate to the nozzle longitudinal axis, and means for flowing a high temperature atomizing gas, such as argon, nitrogen, helium, neon and air (col. 2, lines 56-62), at a flow velocity of supersonic velocities through the nozzle flow channel from the inlet end to the outlet end to atomize the liquid injected into the flow channel into a plume of atomized droplets (col. 3, lines 51-57). The nozzle flow channel converges to a choke portion located between the inlet end and the outlet end, and diverges between the choke portion and the outlet end (see figs. 1 and 2). The liquid material is injected into the nozzle flow channel proximate to the longitudinal axis between the choke portion and the outlet portion (see fig. 1) or

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between the inlet end and the choke portion of the flow channel (see fig. 2). The nozzle may have multiple separate liquid inlets into the flow channel (col. 3, lines 13-16). The nozzles apply to forming metal powders (col. 1, lines 40-43, i.e., gas atomization of metal) and form a spray of substantially uniform droplet size (i.e., col. 1, lines 13-17; col. 2, lines 15-24).

Garner et al.(-152) disclose a spray forming system for making a mold by spraying metal around a pattern (i.e., see abstract).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the system of Bowen et al.(-043) with the nozzle of Alvarez et al.(-853) because the nozzle of Alvarez et al.(-853) would provide an alternative configuration for forming a spray of directed droplets and because such a modification would provide a spray of substantially uniform droplet size and thus overcome the deficiency in spray forming of wide droplet size distribution as recited by Orme et al.(-360), and to modify the article to be a mold because a mold is an article that can be made by spray forming as disclosed by Garner et al.(-152).

4. Claims 18-24, 32 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bowen et al.(-043) in view of Orme et al.(-360), Alvarez et al.(-853) and Garner et al.(-152) as

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applied to claims 1-8, 16, 17 and 34 above, and further in view of Ashok et al.(-752).

Bowen et al.(-043), Orme et al.(-360), Alvarez et al.(-853) and Garner et al.(-152) are applicable as mentioned above.

Ashok et al.(-752) disclose a spray forming system including a plurality of nozzles for spraying incompatible liquids (fig. 3; col. 5, lines 44-50) to form an article of incompatible liquids.

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to further modify the system to have multiple nozzles because a plurality of nozzles would enable the system to make an article made of incompatible liquids as recited by Ashok et al.(-752).

5. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bowen et al.(-043) in view of Orme et al.(-360), Alvarez et al.(-853) and Garner et al.(-152) as applied to claims 1-8, 16, 17 and 34 above, and further in view of Rotolico et al.(-225).

Bowen et al.(-043), Orme et al.(-360), Alvarez et al.(-853) and Garner et al.(-152) are applicable as mentioned above.

Rotolico et al.(-225) disclose a spray forming system which sprays liquid particles with solid particles to form a composite article (i.e., see abstract).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to further modify the system by feeding liquids with solid particles to the nozzle because such a modification is known in the spray forming art and would produce a composite article as disclosed by Rotolico et al.(-225).

6. Applicant's arguments, including the 132 Declaration filed on 14 February 2002, with respect to the instant claims have been considered but are moot in view of the new ground(s) of rejection.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Clark et al.(-117), Leatham et al.(-275) and Gore(-657) are cited as of interest.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Leyson whose telephone number is (703) 308-2647. The examiner can normally be reached on M-F(8:30-6:00) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (703) 308-3322. The fax phone numbers for the organization where this application or proceeding is assigned



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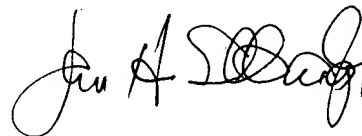
are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

*jl*

jl

May 20, 2002



JAN H. SILBAUGH  
SUPERVISORY PATENT EXAMINER  
ART UNIT 1722

*05/20/02*